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GenCore version 5.1.6
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OM protein - protein search, using SW model

Run on: June 18, 2003, 03:16:37 ; Search time 37.4454 Seconds

(without alignments)
1215.770 Million cell updates/sec

Title: US-09-807-933b-1

Perfect score: 1836
Sequence: 1 MKFTIASALLALALGTEM.....TYKEVTCPEKITAKTGCSSRK 338

Scoring table:

BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 908470 seqs, 133250620 residues

Total number of hits satisfying chosen parameters: 908470

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

A.Geneseq_101002:.*
1: /SID2/gcgdata/geneseq/geneseq-emb1/AA1980.DAT.*
2: /SID2/gcgdata/geneseq/geneseq-emb1/AA1981.DAT.*
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6: /SID2/gcgdata/geneseq/geneseq-emb1/AA1985.DAT.*
7: /SID2/gcgdata/geneseq/geneseq-emb1/AA1986.DAT.*
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14: /SID2/gcgdata/geneseq/geneseq-emb1/AA1993.DAT.*
15: /SID2/gcgdata/geneseq/geneseq-emb1/AA1994.DAT.*
16: /SID2/gcgdata/geneseq/geneseq-emb1/AA1995.DAT.*
17: /SID2/gcgdata/geneseq/geneseq-emb1/AA1996.DAT.*
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20: /SID2/gcgdata/geneseq/geneseq-emb1/AA1999.DAT.*
21: /SID2/gcgdata/geneseq/geneseq-emb1/AA2000.DAT.*
22: /SID2/gcgdata/geneseq/geneseq-emb1/AA2001.DAT.*
23: /SID2/gcgdata/geneseq/geneseq-emb1/AA2002.DAT.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

| Result No. | Score | Query Match | Length | ID | Description |
|------------|--------|-------------|--------|----|--------------------|
| 1 | 1836 | 100.0 | 338 | 21 | Endoglucanase prot |
| 2 | 1836 | 100.0 | 338 | 23 | AAO15055 |
| 3 | 1836 | 100.0 | 338 | 23 | AAO15056 |
| 4 | 1612 | 87.8 | 366 | 21 | AAO15052 |
| 5 | 1612 | 87.8 | 366 | 23 | AAO15053 |
| 6 | 1612 | 87.8 | 366 | 23 | AAO15054 |
| 7 | 1404 | 76.5 | 360 | 21 | AAO15055 |
| 8 | 1404 | 76.5 | 360 | 23 | AAO15056 |
| 9 | 1404 | 76.5 | 360 | 23 | AAO15057 |
| 10 | 1263.5 | 68.8 | 245 | 23 | AAO15063 |

| | | | | | |
|----|--------|------|-----|----|----------|
| 11 | 1247 | 67.9 | 338 | 21 | AAO15055 |
| 12 | 1247 | 67.9 | 338 | 23 | AAO15056 |
| 13 | 1247 | 67.9 | 338 | 23 | AAO15057 |
| 14 | 1222.5 | 66.6 | 387 | 21 | AAO15052 |
| 15 | 1222.5 | 66.6 | 387 | 23 | AAO15053 |
| 16 | 1222.5 | 66.6 | 387 | 23 | AAO15054 |
| 17 | 1159 | 63.1 | 328 | 23 | AAO15055 |
| 18 | 1106 | 60.2 | 346 | 21 | AAO15056 |
| 19 | 1106 | 60.2 | 346 | 23 | AAO15057 |
| 20 | 1106 | 60.2 | 346 | 23 | AAO15058 |
| 21 | 761.5 | 41.4 | 325 | 21 | AAO15059 |
| 22 | 759.5 | 41.4 | 325 | 21 | AAO15060 |
| 23 | 759.5 | 41.4 | 325 | 22 | AAO15061 |
| 24 | 756.5 | 41.2 | 299 | 17 | AAO15062 |
| 25 | 756.5 | 41.2 | 299 | 19 | AAO15063 |
| 26 | 755.5 | 41.1 | 225 | 17 | AAO15064 |
| 27 | 755.5 | 41.1 | 297 | 17 | AAO15065 |
| 28 | 755.5 | 41.1 | 308 | 17 | AAO15066 |
| 29 | 751.5 | 40.9 | 200 | 19 | AAO15067 |
| 30 | 750.5 | 40.9 | 204 | 19 | AAO15068 |
| 31 | 743.5 | 40.5 | 200 | 19 | AAO15069 |
| 32 | 738 | 40.2 | 223 | 23 | AAO15070 |
| 33 | 738 | 40.2 | 223 | 23 | AAO15071 |
| 34 | 735.5 | 40.1 | 200 | 19 | AAO15072 |
| 35 | 722 | 39.3 | 349 | 17 | AAO15073 |
| 36 | 718 | 39.1 | 310 | 17 | AAO15074 |
| 37 | 716.5 | 39.0 | 202 | 19 | AAO15075 |
| 38 | 716.5 | 39.0 | 222 | 17 | AAO15076 |
| 39 | 716.5 | 39.0 | 294 | 17 | AAO15077 |
| 40 | 711.5 | 38.8 | 306 | 19 | AAO15078 |
| 41 | 709.5 | 38.6 | 304 | 19 | AAO15079 |
| 42 | 703 | 38.3 | 201 | 19 | AAO15080 |
| 43 | 701 | 38.2 | 307 | 19 | AAO15081 |
| 44 | 695.5 | 37.9 | 235 | 18 | AAO15082 |
| 45 | 694 | 37.8 | 376 | 12 | AAO15083 |

ALIGNMENTS

| | | |
|----------|--|----------------------------|
| RESULT 1 | AAO150821 | standard; Protein; 338 AA. |
| ID | AAO150821 | |
| AC | AAO150821 | |
| DT | 25-SEP-2000 | (first entry) |
| DE | Endoglucanase protein sequence 1. | |
| KW | Endoglucanase; cellulose breakdown; produce pulp; papermaking; animal foodstuff. | |
| OS | Rhizopus oryzae. | |
| XX | XX | |
| PN | WO200024879-A1. | |
| XX | XX | |
| PD | 04-MAY-2000. | |
| XX | XX | |
| PF | 25-OCT-1999; | 99WO-JP05884. |
| XX | XX | |
| PR | 23-OCT-1998; | 98UP-0302387. |
| XX | XX | |
| PA | (MEIJU) MEIJU SEIKA KAISHA LTD. | |
| PI | Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T; | |
| PI | Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T; | |
| XX | XX | |
| DR | WPI: 2000-365117/31. | |
| DR | N-PSDB; AAO150821. | |
| XX | XX | |
| PT | Endoglucanases of fungal origin with high activity under alkaline | |
| PT | conditions for production of paper pulp and animal feedstuffs | |

Endoglucanase prot
Rhizopus arrizus
M. citrinellus
Endoglucanase prot
Rhizopus arrizus
M. citrinellus
Endoglucanase-rela
Endoglucanase prot
Phycomyces nitens
P. nitens CP99002
Hybrid DNA protein
Amino acid sequenc
Chrysosporium C1 s
Cellulytic enzyme
Monocomponent endo
Cellulytic enzyme
Chimeric endogluc
Chimeric endogluc
Thielavia terrestr
Myceliophthora the
Thielavia terrestr
Humicola insolens
Humicola insolens
Sordaria fimicola
Cellulytic enzyme
Cellulytic enzyme
Macrophoma phase
Cellulytic enzyme
Chimeric endogluc
Hybrid DNA protein
Volucella collecto
Hybrid DNA protein
20K-cellulase from
Fusarium oxysporum

XX PS Claim 44; Page 106-108; 180pp; Japanese.

XX CC This sequence represents an endoglucanase protein. The invention relates to an endoglucanase of fungal origin which can completely break down purified cellulose at a concentration of less than 1mg protein/litre, and produces more than 50% breakdown of cellulose at pH 8.5. The invention includes endoglucanase protein sequences (see CC AAB09825-B09830), endoglucanase nucleotide sequences (see CC AAA62726-A62732), and primers (AAA62733-A62802) which are used in the identification of the endoglucanase sequences, and in the construction of vectors containing the polynucleotides. The endoglucanase enzymes are used for the production of pulp for papermaking and for the production of animal foodstuffs.

XX SQ Sequence 338 AA;

Query Match 100.0%; Score 1836; DB 21; Length 338;
Best Local Similarity 100.0%; Pred. No. 2.1e-125;
Matches 338; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MKFTITASSALLALALGTEMASAAECCKLYGCGGKMMNGPTCCBSGCTKYVNDYYSOC 60
DB 1 MKFTITASSALLALALGTEMASAAECCKLYGCGGKMMNGPTCCBSGCTKYVNDYYSOC 60

QY 61 LPBSSSGNKSSESAAHKKTTTAAHKKTTTAAHKKTTTAAHKKTTTAAKASTPNSSSSSSG 120
DB 61 LPBSSSGNKSSESAAHKKTTTAAHKKTTTAAHKKTTTAAHKKTTTAAKASTPNSSSSSSG 120

QY 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180
DB 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180

QY 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180
DB 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180

QY 181 GNSYMCNDNQPMVAVNDNLAYGFAPAAATISGGGSESRWCCSFELTFTSTSVAGKKMVOVTN 240
DB 181 GNSYMCNDNQPMVAVNDNLAYGFAPAAATISGGGSESRWCCSFELTFTSTSVAGKKMVOVTN 240

QY 241 TGGDLSSSTGAHFDLQMPGGGVGIFNGCSSQMGAPNDGWSRYGIGISSASDCSLPSALO 300
DB 241 TGGDLSSSTGAHFDLQMPGGGVGIFNGCSSQMGAPNDGWSRYGIGISSASDCSLPSALO 300

QY 301 AGCKMRFNMFKNADNPSMTYKEVTCPEKITTAKTGCGRK 338
DB 301 AGCKMRFNMFKNADNPSMTYKEVTCPEKITTAKTGCGRK 338

RESULT 2
AA015052
ID AA015052 standard; Protein; 338 AA.

XX AC AA015052;

XX DT 22-AUG-2002 (first entry)

XX DE Rhizopus arrhizus endoglucanase-related protein 1.

XX KM Zygomycetes-originated endoglucanase; cellulose binding domain;

XX KW fibre processing; waste paper de-inking; paper pulp.

XX OS Rhizopus arrhizus.

XX PN WO200242474-A1.

XX PD 30-MAY-2002.

XX PR 21-NOV-2001; 2001WO-JP10188.

XX PR 21-NOV-2000; 2000JP-0354296.

XX PA (MEIJ) MEIJI SEIKA KAISHA LTD.

XX PI Nakane A, Baba Y, Koga J, Kubota H;

DR MPI; 2002-471729/50.

DR N-PSDB; AAL43244, AAL43250.

XX PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase, with effect of endoglucanase activity enhanced in processing fibers, deinking waste paper and improving freeness of paper pulp.

XX PS Claim 5; Page 54-55; 109pp; Japanese.

XX CC The invention comprises the amino acid and coding sequences of Zygomycetes-originated endoglucanase enzymes lacking the cellulose binding domain. The Zygomycetes-originated endoglucanase enzymes of the invention have enhanced endoglucanase activity. The Zygomycetes-originated endoglucanase enzymes of the invention are useful for processing fibers, de-inking waste paper and improving the freeness of paper pulp - which is particularly applicable in detergent compositions. The present amino acid sequence represents an endoglucanase-related protein of the invention.

XX SQ Sequence 338 AA;

Query Match 100.0%; Score 1836; DB 23; Length 338;
Best Local Similarity 100.0%; Pred. No. 2.1e-125;
Matches 338; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MKFTITASSALLALALGTEMASAAECCKLYGCGGKMMNGPTCCBSGCTKYVNDYYSOC 60
DB 1 MKFTITASSALLALALGTEMASAAECCKLYGCGGKMMNGPTCCBSGCTKYVNDYYSOC 60

QY 61 LPBSSSGNKSSESAAHKKTTTAAHKKTTTAAHKKTTTAAHKKTTTAAKASTPNSSSSSSG 120
DB 61 LPBSSSGNKSSESAAHKKTTTAAHKKTTTAAHKKTTTAAHKKTTTAAKASTPNSSSSSSG 120

QY 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180
DB 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180

QY 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180
DB 121 KYSAVSGAGSGNGVTRRYNDCCKASGSPGKANVSSPVKSCNKDGYTALSDNAOSGCG 180

QY 181 GNSYMCNDNQPMVAVNDNLAYGFAPAAATISGGGSESRWCCSFELTFTSTSVAGKKMVOVTN 240
DB 181 GNSYMCNDNQPMVAVNDNLAYGFAPAAATISGGGSESRWCCSFELTFTSTSVAGKKMVOVTN 240

QY 241 TGGDLSSSTGAHFDLQMPGGGVGIFNGCSSQMGAPNDGWSRYGIGISSASDCSLPSALO 300
DB 241 TGGDLSSSTGAHFDLQMPGGGVGIFNGCSSQMGAPNDGWSRYGIGISSASDCSLPSALO 300

QY 301 AGCKMRFNMFKNADNPSMTYKEVTCPEKITTAKTGCGRK 338
DB 301 AGCKMRFNMFKNADNPSMTYKEVTCPEKITTAKTGCGRK 338

RESULT 3
ABB08060
ID ABB08060 standard; protein; 338 AA.

XX AC ABB08060;

XX DT 27-AUG-2002 (first entry)

XX DE R. oryzae CP96001 RCEI protein.

XX KM Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;

XX KW pulp treatment; RCEI.

XX OS Rhizopus oryzae.

XX FH Key Location/Qualifiers

FT Peptide 1..23 /note= "signal peptide"

FT Protein 24..338 /note= "mature protein"

XX PN WO200238754-A1.

| | |
|---------------------------|---|
| PD | 16-MAY--2002 |
| XX | |
| XX | 12-NOV-2001; 2001WO-JP09858. |
| PR | 10-NOV-2000; 2000JP-034921. |
| XX | |
| PA | (MEIJ) MEIJI SEIKA KAISHA LTD. |
| XX | |
| PI | Koga J, Nakane A, Baba Y, Kono T; |
| XX | |
| DR | WPI, 2002-471555/50. |
| XX | |
| PT | Cellulase preparations containing transconjugant-originated |
| PT | endoglucanase and non-ionic surfactants, useful in detergent |
| PT | compositions, in treating cellulose fibers and deinking waste paper and |
| PT | improving freeness of paper pulp - |
| XX | |
| P5 | Claim 3; Page 21-22; 38pp; Japanese. |
| XX | |
| CC | The invention relates to a cellulase preparation comprising a |
| CC | transconjugant-originated endoglucanase and a non-ionic surfactant. The |
| CC | endoglucanase is selected from RCEI, RCEII, RCEIII, MCEI, MCEII or PCEI |
| CC | proteins. The preparations are useful in detergent compositions, in |
| CC | treating cellulose fibers and deinking waste paper and improving the |
| CC | freeness of paper pulp. The fibers treated by the preparations have |
| CC | reduced feathering and improved skin-feel and appearance with colour |
| CC | clarification, local change in colour and softening, and after deinking |
| CC | and paper pulp treatment, there is an improvement on freeness of the |
| CC | paper pulp. This treatment with the cellulase preparation can be operated |
| CC | at significantly lower cost. The present sequence represents the |
| CC | R. oryzae CP96001 RCEI protein. |
| XX | |
| SQ | Sequence 338 AA; |
| XX | |
| Query Match: | 100.0%; Score 1836; DB 23; Length 338; |
| Best Local Similarity | 100.0%; Pred. No. 2.1e-125; |
| Matches 338; Conservative | 0; Mismatches 0; Indels 0; Gaps 0; |
| OY | 1 MKFTIASALLALALAGTETMAAAACSKLYGCGGGKMNNGPTCCSGSTCKVSN DY SQC 60 DB 1 MKFTIASALLALALAGTETMAAAACSKLYGCGGGKMNNGPTCCSGSTCKVSN DY SQC 60 |
| OY | 61 LPSGSSGNKSSESAAHKTTTAAHKKTTTAAHKKTTTAAAKTTTVAKASTPSNSSSSSG 120 DB 61 LPSGSSGNKSSESAAHKTTTAAHKKTTTAAHKKTTTAAAKTTTVAKASTPSNSSSSSG 120 |
| OY | 121 KYSAIVSGASGVGTTRVWDCCKASCMPGRANVSSPVKSCNKGAVTLASNSNAOSGNG 180 DB 121 KYSAIVSGASGVGTTRVWDCCKASCMPGRANVSSPVKSCNKGAVTLASNSNAOSGNG 180 |
| OY | 181 GNSVYCNDNOPVAVDNLAYGFAPAAAI SGGSERACCSCFELTFNSTVAGKRWVQVTN 240 DB 181 GNSVYCNDNOPVAVDNLAYGFAPAAAI SGGSERACCSCFELTFNSTVAGKRWVQVTN 240 |
| OY | 241 TGGDLGSGTGAFHDLPMDPGGVGIFPNGCSSQMGAPNDMGSRYGGISASDCSSLPSALO 300 DB 241 TGGDLGSGTGAFHDLPMDPGGVGIFPNGCSSQMGAPNDMGSRYGGISASDCSSLPSALO 300 |
| OY | 301 AGCKRFRFWFKRADNPMSMTTYEAVTCPEKAITATGCSRK 338 DB 301 AGCKRFRFWFKRADNPMSMTTYEAVTCPEKAITATGCSRK 338 |
| RESULT 4 | |
| ID | AAB09822 standard; Protein; 366 AA. |
| AC | AAB09822; |
| DT | 25-SEP-2000 (first entry) |
| DE | Endoglucanase protein sequence 2. |

| | |
|---------------------------|---|
| KM | Endoglucanase; cellulose breakdown; produce pulp; papermaking; |
| KX | animal foodstuffs. |
| XX | Rhizopus oryzae. |
| OS | WO200024879-A1. |
| PN | MO200024879-A1. |
| XX | 04-MAY-2000. |
| PD | 25-OCT-1999; 99WO-JP05884. |
| PJ | 23-OCT-1998; 98JP-0302387. |
| PR | (MEIJ) MEIJI SEIKA KAISHA LTD. |
| PA | Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T; |
| PI | Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T; |
| XX | WPI; 2000-365117/31. |
| DR | N-PSDB; AAA62727. |
| XX | Endoglucanases of fungal origin with high activity under alkaline |
| PT | conditions for production of paper pulp and animal feedstuffs - |
| XX | Claim 44; Page 110-113; 180pp; Japanese. |
| ES | This sequence represents an endoglucanase protein. The invention relates |
| CC | to an endoglucanase of fungal origin which can completely break down |
| CC | purified cellulose at a concentration of less than 1mg protein/litre, |
| CC | and produces more than 50% breakdown of cellulose at pH 8.5. The |
| CC | invention includes endoglucanase protein sequences (see |
| CC | AA809825-809830), endoglucanase nucleotide sequences (see |
| CC | AAA62726-62732) and primers (AAA62733-62802) which are used in the |
| CC | identification of the endoglucanase sequences, and in the construction of |
| CC | vectors containing the polynucleotides. The endoglucanase enzymes are |
| CC | used for the production of pulp for papermaking and for the production of |
| CC | animal foodstuffs. |
| XX | Sequence 366 AA; |
| SQ | |
| Query Match | 87.8%; Score 1612; DB 21; Length 366; |
| Best Local Similarity | 80.6%; Pred. No. 4.1e-109; |
| Matches 304; Conservative | 9; Mismatches 14; Indels 50; Gaps 3 |
| OY | 1 MKFTITIASLALALGTEMASAAACSKLYGGCGGKMNNGPTCCSGSTCKVSN DYYSQC 60 |
| Db | 1 MKFTITISSALALALGTEMASAAACSKLYGGCGGKMNNGPTCCSGSTCKVSN DYYSQC 60 |
| OY | 61 LPSSGSNGKS-----BSAHKTTTAA 81 |
| Db | 61 LAPSSNGKSSEBCKLYGGCGGKMNNGPTCCSGSTCKVSN DYYSQC LAPSSNGKTSSES 120 |
| OY | 82 AHKTTTAHKKTTTTAPAKTTTYAKASTPSNSSSSSGKTSAVSAGASGNGVTTRYWDC 141 |
| Db | 121 AHKT-----TTTAPAKEITTTAKAS-----NSNSSGKYISVGASGNGNVTRYWDC 169 |
| OY | 142 CKASCSPWGKANVSPPVKSCNKDGYTALSNDNAOCSGNCNGSYMCNDNDOPAVVNLAAG 201 |
| Db | 170 CKASCSPWGKANVSPPVKSCNKDGYTALSNDNAOCSGNCNGSYMCNDNDOPAVVNLAAG 229 |
| OY | 202 PAAAIASGGGSRMCCCFELTFTSTSVAGKKMVQVNTGTGDLSSTGAFHDLPMPGG 261 |
| Db | 230 PAAAAISGGGSRMCCCFELTFTSTSVAGKKMYIQVNTGTGDLSSSTGAHFDLQMPGG 289 |
| OY | 262 VGINCGSSOMGAPNDMGSRYYGISASDCSLPSALOAGCKMFPMFKADNPSTMVY 321 |
| Db | 290 VGINFGCSKOMGAPNDMGSRYYGISASDCSLPSALOAGCKMFPMFKADNPSTMVY 349 |
| OY | 322 EVTPCKEITATKGCRK 338 |
| Db | 350 EVTPCKEITATKGCRK 366 |

RESULT 5
AAO15053 standard; Protein; 366 AA.

XX AAO15053;

XX 22-AUG-2002 (first entry)

XX Rhizopus arrhizus endoglucanase-related protein 2.

XX Zymomyces-originated endoglucanase; cellulose binding domain;
KM fibre processing; waste paper de-inking; paper pulp.

XX Rhizopus arrhizus.

XX MO200242474-A1.

XX 30-MAY-2002.

XX 21-NOV-2001; 2001WO-JP10188.

XX 21-NOV-2000; 2000JP-0354296.

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX Nakane A, Baba Y, Koga J, Kubota H;

XX WPI; 2002-471729/50.

XX N-PSDB; AAL43245.

XX Cellulose-binding domain-lacking Zymomyces-originated endoglucanase,
PT delinking waste paper and improving freeness of paper pulp -

XX Claim 5; Page 58-60; 109pp; Japanese.

XX The invention comprises the amino acid and coding sequences of
CC zymomyces-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zymomyces-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zymomyces-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.

XX Sequence 366 AA;

XX Query Match 87.8%; Score 1612; DB 23; Length 366;
Best Local Similarity 80.6%; Pred. No. 4.1e-109;
Matches 304; Conservative 9; Mismatches 14; Indels 50; Gaps 3;

1 MKFTITASSALALALGTEMASAECSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60
1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

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1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

DB 290 VGIFNGCSKQMGAFNDWMSRYGIGSSASDCSSLPALQAGCKMRFNADNPMTYK 349
QY 322 EVTPCKEITAKTGCSRK 338
DB 350 EVTPCKEITAKTGCSRK 366

RESULT 6
ABB08061 standard; protein; 366 AA.

XX ABB08061;

XX 27-AUG-2002 (first entry)

XX R. oryzae CP96001 RCEII protein.

XX Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KM pulp treatment; RCEII.

XX Rhizopus oryzae.

XX MO200238754-A1.

XX 16-MAY-2002.

XX 12-NOV-2001; 2001WO-JP09858.

XX 10-NOV-2000; 2000JP-0343921.

XX (MEIJ) MEIJI SEIKA KAISHA LTD.

XX Koga J, Nakane A, Baba Y, Kono T;

XX WPI; 2002-471555/50.

XX Cellulase preparations containing transconjugant-originated
PT endoglucanase and non-ionic surfactants, useful in detergent
PT compositions, in treating cellulose fibers and delinking waste paper and
PT improving freeness of paper pulp -

XX Claim 3; Page 23-24; 38pp; Japanese.

XX The invention relates to a cellulase preparation comprising a
CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC endoglucanase is selected from RCEII, RCEII, MCEI, MCEI or PCBI
CC proteins. The preparations are useful in detergent compositions, in
CC treating cellulose fibers and delinking waste paper and improving the
CC freeness of paper pulp. The fibers treated by the preparations have
CC reduced feathering and improved skin-feel and appearance with colour
CC clarification, local change in colour and softening, and after delinking
CC and paper pulp treatment, there is an improvement on freeness of the
CC paper pulp. This treatment with the cellulase preparation can be operated
CC at significantly lower cost. The present sequence represents the
CC R. oryzae CP96001 RCEII protein.

XX Sequence 366 AA;

1 MKFTITSSALALALGTEMASAECSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60
1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

1 MKFTITSSALALALGTEMASAKCSKLYGCGGKNMNGPTCCSGSTCKVSNDDYSSQC 60

```

OY 61 LPSGSSGNKS-----ESAHKTTTA 81
DB 61 LAPESNGNSSECSKLYGCGGKDMNGPTCCESGTCVKVSNNDYQCLAPESNGNKTSES 120
OY 82 AHKTTTAHKTTTAPAKTTTVAKASTPSSSSSSSKRYAVSGASGNGVTRRYDC 141
DB 121 AHKTT-----TTTAPAKETTTAKAS-----NSSNSGKYSIVSGASGNGVTRRYDC 169
OY 142 CKAASWPKANAVSPVSCNKGVTALSDNSAOSGNGNGSYMCCNDNPMAVNDNLAYG 201
DB 170 CKAASWPKANAVSPVSCNKGVTALSDNSAOSGNGNGSYMCCNDNPMAVNDNLAYG 229
OY 202 FAALAISSGGSERWCCSCFELTFTSTSVAGKXVYVNTTGGDLASSTGAHFDLQMPGG 261
DB 230 FAALAISSGGSERWCCSCFELTFTSTSVAGKXVYVNTTGGDLASSTGAHFDLQMPGG 289
OY 262 VGIFFGCSQKAPNDGMSRYGIGISASDCSSLPALQAGCKRPMFKADNPSMTYK 321
DB 290 VGIFFGCSQKAPNDGMSRYGIGISASDCSSLPALQAGCKRPMFKADNPSMTYK 349
OY 322 EYTCPEKITAKTGCSRK 338
DB 350 EYTCPEKITAKTGCSRK 366

```

RESULT 7

AAB09823 standard; Protein; 360 AA.

AAB09823;

25-SEP-2000 (first entry)

Endoglucanase protein sequence 3.

Endoglucanase; cellulose breakdown; produce pulp; papermaking; animal foodstuff.

Rhizopus oryzae.

WO200024879-A1.

04-MAY-2000.

25-OCT-1999; 99WO-JP05884.

23-OCT-1998; 98JP-0302387.

(MEIJ) MEIJI SEIKA KAISHA LTD.

Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T, Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;

WPI; 2000-365117/31.

DR N-PSDB; AAA62728.

Endoglucanases of fungal origin with high activity under alkaline conditions for production of paper pulp and animal feedstuffs -

Claim 44; Page 115-117; 180pp; Japanese.

This sequence represents an endoglucanase protein. The invention relates to an endoglucanase of fungal origin which can completely break down purified cellulose at a concentration of less than 1mg protein/litre, and produces more than 50% breakdown of cellulose at pH 8.5. The invention includes endoglucanase protein sequences (see CC AAB09823-B09830), endoglucanase nucleotide sequences (see CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the identification of the endoglucanase sequences, and in the construction of vectors containing the polynucleotides. The endoglucanase enzymes are used for the production of pulp for papermaking and for the production of animal foodstuffs.

Sequence 360 AA;

Query Match 76.5%; Score 1404; DB 21; Length 360;

Best Local Similarity 73.7%; Pred. No. 4, 9e-94; Matches 266; Conservative 32; Mismatches 39; Indels 24; Gaps 7;

```

OY 1 MKFTIASSALLALALGTEMAAECSEKLYGCGGKDMNGPTCCESGTC--KVSNDYVS 58
DB 1 MKFTIASSALLALALGTEMAAECSEKLYGCGGKDMNGPTCCESGTCVDPNPPTS 60
OY 59 QCLPSG--SSGNKS-----ESAHKTTTAAHKTTTA-----AHKTTTAPAK 100
DB 61 QCPVENLSTVTKSSHKTITTESAKTTTITKSKKTTTTEASKTTTTEASKTTTTEAS 120
OY 101 K--TTTAAKST--PNSSSSSGKRYSAVSGASGNGVTRRYDCCKKASCWPKRANVSP 157
DB 121 KTTTAAKASTSTSSSSSSASTNYSAVSGASGNGVTRRYDCCKKPCSWPKADVTS 180
OY 158 VSCNKGVTALSDNSAOSGNGNGSYMCCNDNPMAVNDNLAYGFAALAISSGGSERWCC 217
DB 181 VSCNKGDKT--LADNNTQNGCVGSSSYTCNDNPVAVDDLAIGFAALAISSGSEATWCC 239
OY 218 SCFELTFTSTSVAGKXVYVNTTGGDLASSTGAHFDLQMPGGVGIFFGCSQKAPND 277
DB 240 ACFELTFTSTAVKXKXVYVNTTGSDLGSNTGAHFDLQMPGGVGIFFGCSQKAPND 299
OY 278 GWSRYGIGISASDCSSLPALQAGCKRPMFKADNPSMTYKEVTCPEKITAKTGCSR 337
DB 300 GWSRYGIVSSASDCSSLPALQAGCKRPMFKADNPSMTYKOVTCPEKITAKTGCSR 359
OY 338 K 338
DB 360 K 360

```

RESULT 8

AA015054 standard; Protein; 360 AA.

AA015054;

22-AUG-2002 (first entry)

Rhizopus arthizus endoglucanase-related protein 3.

Zygomycetes-originated endoglucanase; cellulose binding domain; fibre processing; waste paper de-linking; paper pulp.

Rhizopus arthizus.

WO2000242474-A1.

30-MAY-2002.

21-NOV-2001; 2001WO-JP10188.

21-NOV-2000; 2000JP-0354296.

(MEIJ) MEIJI SEIKA KAISHA LTD.

Nakane A, Baba Y, Koga J, Kubota H;

WPI; 2002-471729/50.

DR N-PSDB; AAL43246.

Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase, with effect of endoglucanase activity enhanced in processing fibers, detinking waste paper and improving freeness of paper pulp -

Claim 5; Page 63-65; 109pp; Japanese.

The invention comprises the amino acid and coding sequences of zygomycetes-originated endoglucanase enzymes lacking the cellulose

CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
 CC invention have enhanced endoglucanase activity. The zygomycetes-
 CC originated endoglucanase enzymes of the invention are useful for
 CC processing fibres, de-inking waste paper and improving the freeness of
 CC paper pulp - which is particularly applicable in detergent compositions.
 CC The present amino acid sequence represents an endoglucanase-related
 CC protein of the invention.

CC
 XX
 SQ Sequence 360 AA;

Query Match 76.5%; Score 1404; DB 23; Length 360;
 Best Local Similarity 73.7%; Pred. No. 4.9e-94;

Matches 266; Conservative 32; Mismatches 39; Indels 24; Gaps 7;

QY 1 MKETITASSALLALALGTEMASAECSKLYGCGGKMNWPTCCESGTC--KVSNDYYS 58
 1 MKETITASSALLALAVGTEMAHAECISKAYGCGGKMNWPTCCESGTCVDYDPNPFYS 60

QY 59 QCLPSC--SSGNKSS-----ESAHKTTTAHKTTTA-----AHKTTTAPAK 100
 61 QCVPMENLSTNKSSTTKTTTESAKTTTTSKSKTTTTEASKTTTTEASKTTTTEAS 120

QY 101 K--TTTVAKAST--PSNSSSSSGKYSANVSGASGNGVTRVMDCCAKSCWPGKANVSSP 157
 121 KTTTITTKASTSTSSSSASTNYSANVSGASGNGETTRVMDCCAKSCWPGKADVTSP 180

QY 158 VSKCNKDGVTALSDNSAOGCNGNSYMCNDQPMVAVNDNLAYGFAAAISGGESRWCC 217
 181 VSKCNKDGKT--LADNNTQNCVGGSSYTCDNDQPMVAVSDDLAIGFAAASISGSEATWCC 239

QY 218 SCEELFTSTSVAGKKMVOVNTGDLGSSGTGAHPDLQMPGGGVIENGCSQWGAEND 277
 240 ACEELFTSTSVAGKKMVOVNTGDLGSSGTGAHPDLQMPGGGVIENGCAQWGAEND 299

QY 278 GWSRRYGGISSASDCSLPSALQAGCKMRFKNADNPMETVKEVTCPEKTEITAKTGCSR 337
 300 GWSRRYGGVSSASDCSLPSALQAGCKMRFKNADNPMETVKEVTCPEKTEITAKTGCSR 359

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

XX Koga J, Nakane A, Baba Y, Kono T;
 XX WPI; 2002-471555/50.

XX Cellulase preparations containing transconjugant-originated
 PT endoglucanase and non-ionic surfactants, useful in detergent
 PT compositions, in treating cellulose fibers and deinking waste paper and
 XX improving freeness of paper pulp

PS Claim 3; Page 25-27; 38pp; Japanese.

XX The invention relates to a cellulase preparation comprising a
 CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
 CC endoglucanase is selected from RCEI, RCEII, RCEIII, MCEI, MCEII or PCEI
 CC proteins. The preparations are useful in detergent compositions, in
 CC treating cellulose fibers and deinking waste paper and improving the
 CC freeness of paper pulp. The fibers treated by the preparations have
 CC reduced feathering and improved skin-feel and appearance with colour
 CC clarification, local change in colour and softening, and after deinking
 CC and paper pulp treatment, there is an improvement on freeness of the
 CC paper pulp. This treatment with the cellulase preparation can be operated
 CC at significantly lower cost. The present sequence represents the
 CC R. oryzae CP96001 RCEIII protein.

SQ Sequence 360 AA;

Query Match 76.5%; Score 1404; DB 23; Length 360;
 Best Local Similarity 73.7%; Pred. No. 4.9e-94;

Matches 266; Conservative 32; Mismatches 39; Indels 24; Gaps 7;

QY 1 MKETITASSALLALALGTEMASAECSKLYGCGGKMNWPTCCESGTC--KVSNDYYS 58
 1 MKETITASSALLALAVGTEMAHAECISKAYGCGGKMNWPTCCESGTCVDYDPNPFYS 60

QY 59 QCLPSC--SSGNKSS-----ESAHKTTTAHKTTTA-----AHKTTTAPAK 100
 61 QCVPMENLSTNKSSTTKTTTESAKTTTTSKSKTTTTEASKTTTTEASKTTTTEAS 120

QY 101 K--TTTVAKAST--PSNSSSSSGKYSANVSGASGNGVTRVMDCCAKSCWPGKANVSSP 157
 121 KTTTITTKASTSTSSSSASTNYSANVSGASGNGETTRVMDCCAKSCWPGKADVTSP 180

QY 218 SCEELFTSTSVAGKKMVOVNTGDLGSSGTGAHPDLQMPGGGVIENGCSQWGAEND 277
 240 ACEELFTSTSVAGKKMVOVNTGDLGSSGTGAHPDLQMPGGGVIENGCAQWGAEND 299

QY 278 GWSRRYGGISSASDCSLPSALQAGCKMRFKNADNPMETVKEVTCPEKTEITAKTGCSR 337
 300 GWSRRYGGVSSASDCSLPSALQAGCKMRFKNADNPMETVKEVTCPEKTEITAKTGCSR 359

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

QY 338 K 338
 360 K 360

OS Unidentified.
 XX WO200242474-A1.
 XX
 XX 30-MAY-2002.
 PD
 XX 21-NOV-2001; 2001WO-JP10188.
 PF
 XX 21-NOV-2000; 2000JP-0354296.
 PR
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.
 PA
 XX Nakane A, Baba Y, Koga J, Kubota H;
 PI
 XX WPI; 2002-471729/50.
 DR
 XX
 XX Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
 PT with effect of endoglucanase activity enhanced in processing fibers,
 PT deinking waste paper and improving freeness of paper pulp -
 XX
 XX Example 2; Page 33; 109pp; Japanese.
 PS
 XX The invention comprises the amino acid and coding sequences of
 CC zygomyces-originated endoglucanase enzymes lacking the cellulose
 CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
 CC invention have enhanced endoglucanase activity. The zygomycetes-
 CC originated endoglucanase enzymes of the invention are useful for
 CC processing fibres, de-inking waste paper and improving the freeness of
 CC paper pulp - which is particularly applicable in detergent compositions.
 CC The present amino acid sequence represents an endoglucanase-related
 CC protein of the invention.
 XX
 XX Sequence 245 AA;
 SQ
 Query Match 68.8%; Score 1263.5; DB 23; Length 245;
 Best Local Similarity 71.6%; Pred. No. 5e-84;
 Matches 242; Conservative 0; Mismatches 3; Indels 93; Gaps 1;
 QY 1 MKFTITASSALLALALGTEMASAECSKLYGCGGKNNKNGPTCCSSGSTCKYNSNDYSGC 60
 DB 1 MKFTITASSALLALALGTEMASAA----- 24
 QY 61 LPSSGSGNKSSESAAHKTTTAAHKTTTAAHKTTTAAKTTTAAKASTPENSSSSSG 120
 DB 25 -----10G 27
 QY 121 KTSAVSGAGSNGVTRTYWDCCKASCSPFGKANVSSPVKSCNKDGYTALSDSNAQSGCNG 180
 DB 28 KTSAVSGAGSNGVTRTYWDCCKPCSPFGKANVSSPVKSCNKDGYTALSDSNAQSGCNG 87
 QY 181 GNSVNCNPNQPAVNDNLAYGFRAAAISGGGSRMCCSCFELTFSTSVAGKMMVQVYN 240
 DB 88 GNSVNCNPNQPAVNDNLAYGFRAAAISGGGSRMCCSCFELTFSTSVAGKMMVQVYN 147
 QY 241 TGGDLSSTGAHFDLQMPGGGVGIFNGCASSQWGAAPDNGSRYGISASDSSLPALQ 300
 DB 148 TGGDLSSTGAHFDLQMPGGGVGIFNGCASSQWGAAPDNGSRYGISASDSSLPALQ 207
 QY 301 AGCKRFFNWFKNADNPSMTYKEVTCPEKITATGCSRK 338
 DB 208 AGCKRFFNWFKNADNPSMTYKEVTCPEKITATGCSRK 245
 RESULT 11
 AAB09824 standard; Protein; 338 AA.
 XX AAB09824;
 AC
 XX 25-SEP-2000 (first entry)
 DT
 XX Endoglucanase protein sequence 4.
 DE
 XX

KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
 KW animal foodstuff.
 XX
 XX Mucor circinelloides.
 OS
 XX WO200024879-A1.
 XX
 XX 04-MAY-2000.
 PD
 XX 25-OCT-1999; 99WO-JP05884.
 PF
 XX 23-OCT-1998; 98JP-0302387.
 PR
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.
 PA
 XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
 PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
 XX WPI; 2000-365117/31.
 DR N-PSDB; AAA62729.
 XX
 XX Endoglucanases of fungal origin with high activity under alkaline
 PT conditions for production of paper pulp and animal feedstuffs -
 PT
 PS Claim 44; Page 120-122; 180pp; Japanese.
 XX
 XX This sequence represents an endoglucanase protein. The invention relates
 CC to an endoglucanase of fungal origin which can completely break down
 CC purified cellulose at a concentration of less than 1mg protein/1litre,
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The
 CC invention includes endoglucanase protein sequences (see
 CC AAB09825-809830), endoglucanase nucleotide sequences (see
 CC AAA62726-462732) and primers (AAA62733-462802) which are used in the
 CC identification of the endoglucanase sequences, and in the construction of
 CC vectors containing the polynucleotides. The endoglucanase enzymes are
 CC used for the production of pulp for papermaking and for the production of
 CC animal foodstuffs.
 XX
 XX Sequence 338 AA;
 SQ
 Query Match 67.9%; Score 1247; DB 21; Length 338;
 Best Local Similarity 65.4%; Pred. No. 1.1e-82;
 Matches 227; Conservative 40; Mismatches 62; Indels 18; Gaps 6;
 QY 1 MKFTITASSALLALALGTEMASAECSKLYGCGGKNNKNGPTCCSSGSTC--KVSNDYYS 58
 DB 1 MKFTITASSALLALALGTEMASAECSKLYGCGGKNNKNGPTCCSSGSTCVAQEGNKRTYS 59
 QY 59 QCLPSSGSGNKSSESAAHKTTTAAHKTT-----TTAAHKTTTAAKTTTAAKASTP 111
 DB 60 QCLPSSGSGNKSSESAAHKTTTAAHKTTTAAKATATVTTKTVTKTTKTTKSTTAAAST- 118
 QY 112 SNSSSSSGKTSYAVSGAGSNGVTRTYWDCCKASCSPFGKANVSSPVKSCNKDGYTALSD 171
 DB 119 ---STSSAGYKVISGKSGSGSTTRTYWDCCKASCSPFGKASVTPVOTCASNGISL-D 174
 QY 172 SNAQSGCNGKNSYKNDNPNQPAVNDNLAYGFRAAAISGGGSRMCCSCFELTFSTSVAG 231
 DB 175 ANAQSGCNGKNGKNNQPAVNDNLAYGFRAAAISGASGCGGCELTFTSGAASG 234
 QY 232 KKMVVQVNTTGGDLSSTGAHFDLQMPGGGVGIFNGCASSQWGAAPDNGSRYGISASD 291
 DB 235 KKMVVQVNTTGGDLSN---HFDLQMPGGGVGIFNGCAAGKAPDNGARIGVSSVSD 291
 QY 292 CSSLPALQAGCKRFFNWFKNADNPSMTYKEVTCPEKITATGCSRK 338
 DB 292 CASLPALQAGCKRFFNWFKNADNPSMTYKEVTCPEKITATGCSRK 338
 RESULT 12
 AAO15055 standard; Protein; 338 AA.
 ID AAO15055
 XX

AC AA015055;
 XX
 DT 22-AUG-2002 (first entry)
 XX
 DE Rhizopus arrhizus endoglucanase-related protein 4.
 XX
 KM Zygomycetes-originated endoglucanase; cellulose binding domain;
 XX
 KM fibre processing; waste paper de-inking; paper pulp.
 XX
 OS Mucor circinelloides.
 XX
 PN W0200242474-A1.
 XX
 PD 30-MAY-2002.
 XX
 PF 21-NOV-2001; 2001MO-JP10188.
 XX
 PR 21-NOV-2000; 2000JP-0354296.
 XX
 PA (MEIJ) MEIJI SEIKA KAISHA LTD.
 XX
 PI Nakane A, Baba Y, Koga J, Kubota H;
 XX
 DR WPI; 2002-471729/50.
 XX
 DR N-PSDB; AAL43247.
 XX
 PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
 PT with effect of endoglucanase activity enhanced in processing fibers,
 PT deinking waste paper and improving freeness of paper pulp -
 XX
 PS Claim 5; Page 68-70; 109pp; Japanese.
 XX
 CC The invention comprises the amino acid and coding sequences of
 CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
 CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
 CC invention have enhanced endoglucanase activity. The zygomycetes-
 CC originated endoglucanase enzymes of the invention are useful for
 CC processing fibers, de-inking waste paper and improving the freeness of
 CC paper pulp - which is particularly applicable in detergent compositions.
 CC The present amino acid sequence represents an endoglucanase-related
 CC protein of the invention.
 CC
 SQ Sequence 338 AA;
 Query Match 67.9%; Score 1247; DB 23; Length 338;
 Best Local Similarity 65.4%; Pred. No. 1.1e-82;
 Matches 227; Conservative 40; Mismatches 62; Indels 18; Gaps 6;
 QY 1 MKFTTASSALLALALGTEMASAABCSKLYGCGGKNNMGPTCCESGTC--KVSNDYYS 58
 DB 1 MKFTVAITISIAVALALSSS-AEASCSGVYGGCGIGMSGPTCCESGTCVADEGNKYYS 59
 QY 59 QCLPSGSGNKSSESAAHKTTTAHKKT-----TTAAHKTTTAAKTTTAAKASTP 111
 DB 60 QCLPGSHNNAGNASSSTKSTSTTTAKATATVTKVTKTKTTTKTTSTAASST- 118
 QY 112 SNSSSSSGKYSAAVSGASGVVTRYWDCCKASCMPGKANVSPVSKCKDGVTALSD 171
 DB 119 ---STSSAGYKVIISGKSGSGSTTRVWDCCKASCMPGKASVTPVDTCAISGISTL-D 174
 QY 172 SNAOSGCGNSYMCNDNQPAVNDNLAYGPAALAISSGGGSRNCCSFEITFTSTVAG 231
 DB 175 ANAOSGCGNGGFMGNNNQPAVNDNLAYGPAALAISSAGSNEAGWCCGCEYELTFTSAGASG 234
 QY 232 KKMVVQVNTGTGGDSSGTAHPDLQMPGGGVGIFNGCSOMGAPNDGSGRSGISSASD 291
 DB 235 KKMVVQVNTGTGGDLSN---HFDLQMPGGGVGIFNGCAOMGAPNDGSGRSGISSASD 291
 QY 292 CSSLPALQAGCKRFFNFKXADNPSMTYKEVTCPEKITAKTSGSRK 338
 DB 292 CASLPALQAGCKRFFNFKXADNPSMTYKEVTCPEKITAKTSGSRK 338

RESULT 13
 ABB08063
 ID ABB08063 strand1; protein; 338 AA.
 XX
 AC ABB08063;
 XX
 DT 27-AUG-2002 (first entry)
 XX
 DE M. circinelloides CP99001 MCEI protein.
 XX
 KM Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
 XX
 KM pulp treatment; MCEI.
 XX
 OS Mucor circinelloides.
 XX
 PN W0200238754-A1.
 XX
 PD 16-MAY-2002.
 XX
 PF 12-NOV-2001; 2001MO-JP09858.
 XX
 PR 10-NOV-2000; 2000JP-0343921.
 XX
 PA (MEIJ) MEIJI SEIKA KAISHA LTD.
 XX
 PI Koga J, Nakane A, Baba Y, Kono T;
 XX
 DR WPI; 2002-471555/50.
 XX
 PT Cellulase preparations containing transconjugant-originated
 PT endoglucanase and non-ionic surfactants, useful in detergent
 PT compositions, in treating cellulose fibers and deinking waste paper and
 PT improving freeness of paper pulp -
 XX
 PS Claim 3; Page 27-29; 38pp; Japanese.
 XX
 CC The invention relates to a cellulase preparation comprising a
 CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
 CC endoglucanase is selected from RCEI, RCEII, RCEIII, MCEI, MCEII or PCEI
 CC proteins. The preparations are useful in detergent compositions, in
 CC treating cellulose fibers and deinking waste paper and improving the
 CC reduced feathering and improved skin-feel and appearance with colour
 CC clarification, local change in colour and softening, and after deinking
 CC and paper pulp treatment, there is an improvement on freeness of the
 CC paper pulp. This treatment with the cellulase preparation can be operated
 CC at significantly lower cost. The present sequence represents the
 CC M. circinelloides CP99001 MCEI protein.
 CC
 SQ Sequence 338 AA;
 Query Match 67.9%; Score 1247; DB 23; Length 338;
 Best Local Similarity 65.4%; Pred. No. 1.1e-82;
 Matches 227; Conservative 40; Mismatches 62; Indels 18; Gaps 6;
 QY 1 MKFTTASSALLALALGTEMASAABCSKLYGCGGKNNMGPTCCESGTC--KVSNDYYS 58
 DB 1 MKFTVAITISIAVALALSSS-AEASCSGVYGGCGIGMSGPTCCESGTCVADEGNKYYS 59
 QY 59 QCLPSGSGNKSSESAAHKTTTAHKKT-----TTAAHKTTTAAKTTTAAKASTP 111
 DB 60 QCLPGSHNNAGNASSSTKSTSTTTAKATATVTKVTKTKTTTKTTSTAASST- 118
 QY 112 SNSSSSSGKYSAAVSGASGVVTRYWDCCKASCMPGKANVSPVSKCKDGVTALSD 171
 DB 119 ---STSSAGYKVIISGKSGSGSTTRVWDCCKASCMPGKASVTPVDTCAISGISTL-D 174

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Oy 172 SNAQSGCNGNSYMCNDNPMVAVNDNLAYGFAAAAISGGESBRMCCSCCELTFTSTSVAG 231
Db 175 AANAQSGCNGNSYMCNDNPMVAVNDNLAYGFAAASISGNSBAGMCCGCELTFTSTSVAG 234
Oy 232 KMMVQVNTTGGDLSSSTGAHFDLWPGGCGVGI FNGCSSQMGAPNDGMSRGGISASAD 291
Db 235 KMMVQVNTTGGDLSSN--HFDLWPGGCGVGI FNGCAAQMGAPNDGMSRGGISASAD 291
Oy 292 CSSLPSALQAGCKMRFNFKNADNPSMTYKEVTCPEKRTAKTGCSRK 338
Db 292 CASSLPSALQAGCKMRFNFKNADNPSMTYKEVTCPEKRTAKTGCSRK 338

RESULT 14
AAB09825
ID AAB09825 standard; Protein; 387 AA.
AC AAB09825;
DE 25-SEP-2000 (first entry)
XX Endoglucanase protein sequence 5.
XX Endoglucanase, cellulose breakdown; produce pulp; papermaking;
KM animal foodstuff.
OS Phycomyces nitens.
PN WO200024879-A1.
PD 04-MAY-2000.
PF 25-OCT-1999; 99WO-JP05884.
PR 23-OCT-1998; 98JP-0302387.
XX (MEIJ) MEIJI SEIKA KAISHA LTD.
XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murehima K, Nakane A, Yasuchi T, Koga J, Murakami T, Kono T;
XX WPI: 2000-365117/31.
DR N-PSDB; AAA62730.
XX Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX Claim 44; Page 125-127; 180pp; Japanese.
XX This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX Sequence 387 AA;
SQ
Query Match 66.6%; Score 1222.5; DB 21; Length 387;
Best Local Similarity 57.1%; Pred. No. 7.9e-81;
Matches 226; Conservative 40; Mismatches 63; Indels 67; Gaps 6;
Oy 1 MKFTTASALALALGTEMAAECGSKYGGCGGNMGPTCCSGSTCKXSNP----- 55
Db 1 MKFTVAITSIAYALALSSS-ABAAGCSYVGGCGGIGTGPTCCAGSTCKAKXKXYS 59
Oy 56 -----YSGCLPSSGSGNK 69

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Db 60 QCIPEKSSSSSSSCSSVSYQCGIGMGPTCCSGSTCVAGBNKYYSDCLPGSHSNA 119
Oy 70 SSESARKTTTAAHKT-----TTAAHKTTPAPAKTTTAAKSTPSSSSSSSGKY 122
Db 120 GNASTKKTSTRTSTTTAKATATVTTKTVTKTTTKTSTTAASST-----STSSAGY 175
Oy 123 SAVSGASGNGVTRTYMDCCASGSPKAVNSPVKCNKDGYTALSDSNAQSCNGN 182
Db 176 KVISGKSGSSSTRTTYMDCCASGSPKASVYGVPTCASNGISLL-DANAQSCNGN 234
Oy 183 SYMCDNPMVAVNDNLAYGFAAAAISGGESBRMCCSCCELTFTSTSVAGKMMVQVNTTG 242
Db 235 GEMCNNQPMVAVNDNLAYGFAAASISGNSBAGMCCGCELTFTSTGAAGCKMMVQVNTTG 294
Oy 243 GDLSSSTGAHFDLWPGGCGVGI FNGCSSQMGAPNDGMSRGGISASADCSLPSALQAG 302
Db 295 GDLSSN--HFDLWPGGCGVGI FNGCAAQMGAPNDGMSRGGISASADCSLPSALQAG 351
Oy 303 CKMRFNFKNADNPSMTYKEVTCPEKRTAKTGCSRK 338
Db 352 CKMRFNFKNADNPSMTYKEVTCPEKRTAKTGCSRK 387

RESULT 15
AA015056
ID AA015056 standard; Protein; 387 AA.
AC AA015056;
DE 22-AUG-2002 (first entry)
XX Rhizopus arthizus endoglucanase-related protein 5.
XX Zygomyces-originated endoglucanase; cellulose binding domain;
KM fibre processing; waste paper de-linking; paper pulp.
OS Mucor circinelloides.
PN WO200242474-A1.
PD 30-MAY-2002.
PF 21-NOV-2001; 2001WO-JP10188.
PR 21-NOV-2000; 2000JP-0354296.
XX (MEIJ) MEIJI SEIKA KAISHA LTD.
XX Nakane A, Baba Y, Koga J, Kubota H;
PI N-PSDB; AAL43248.
XX Cellulose-binding domain-lacking Zygomyces-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX Claim 5; Page 73-75; 109pp; Japanese.
XX The invention comprises the amino acid and coding sequences of
CC zygomyces-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomyces-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomyces-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-linking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX Sequence 387 AA;
SQ
Query Match 66.6%; Score 1222.5; DB 23; Length 387;
Best Local Similarity 57.1%; Pred. No. 7.9e-81;

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